

FACE Program Alert

Fatality Assessment and Control Evaluation

Department of Health and Family Services * Division of Public Health
Bureau of Occupational Health * 1 W. Wilson St. * PO Box 2659
Madison, WI 53701-2659 * (608) 264-9879
Publication Number PPH 44018

Avoid Serious Injury or Death from Total Mixed Ration (TMR) Mixers

The Wisconsin Fatality Assessment and Control Evaluation (FACE) program warns farm operators and farm workers to be alert for potential hazards from TMR mixers. These mixers have been involved in fatalities in Wisconsin and other states. Contact with the moving parts of a TMR mixer often means death.

Hazards:

- Becoming entangled in the drive system of the mixer, including the PTO (power take-off) driveline, other rotating drive shafts, gears, chains and sprockets, and belts and pulleys.
- Becoming entangled and/or dismembered in the feed processing components of the mixer, including horizontal augers, vertical augers and rotors, paddles, drums, reels, and knives.
- Being struck by components of the mixer during servicing.
- Electrocution (electrically-operated mixers).

Preventive Measures:

1. Never stand on or above the mixer while it is operating, including alongside on a platform or anything else at a height where the person could lean over and fall in. In one Ohio incident, (see NIOSH FACE Report 2002-10, found on the NIOSH FACE website, <http://www.cdc.gov/niosh/face/inhouse2000.html>) a young worker was killed while tossing baled hay into an operating TMR mixer from a stack taller than the mixer, and falling in. A Wisconsin farm worker also fell into a TMR mixer and was killed. Both occurrences resulted in massive injuries.
2. Never reach into the discharge chute or conveyor when the mixer is operating. Being caught on a conveyor, auger, or anything other part of the discharge could result in entanglement, amputation or being pulled into the mixer.
3. Always shut off and lock out all power prior to any cleaning, maintenance, or service activities, to prevent entanglement or unexpected startup. This means using lockout/tagout procedures for switches, switch boxes, or circuit breaker boxes for electrically-powered mixers, and shutting off the tractor engine and

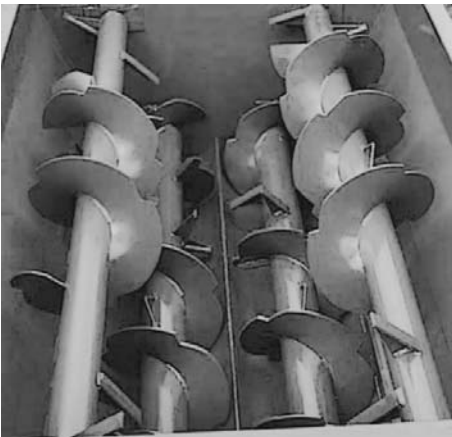
removing the key for tractor-powered mixers. Lockout/tagout procedures are critical when servicing or entering a mixer, since other workers might not be aware of this activity and turn on the mixer. (For more information on lockout procedures, see DHHS (NIOSH) Publication No. 99-110, “ALERT: Preventing Worker Deaths from Uncontrolled Release of Electrical, Mechanical, and Other Types of Hazardous Energy.”)

4. Block or lock in place all moving components that could rotate freely during servicing and cause injury or death. In 1999, a Wisconsin farm worker was killed while servicing a drum-type mixer when the drive mechanism was disconnected, allowing the drum to rotate on its own. The worker’s head was pinned between a mixing paddle and the mixer frame, killing him.
5. Keep all shields over power transmission components in place and properly functioning during operation. This includes shields over chains and sprockets, belts and pulleys, gears, and any other power transmission components. It also includes the power take-off (PTO) driveline shielding, the tractor PTO shield, and the implement input connection (IIC) shield, where the driveline connects to the mixer. These shields are intended to prevent contact with the rotating shaft, attachment mechanisms, universal joints, slip clutches, and other driveline components.
6. Workers are at risk of falls when climbing inspection ladders. Ladders attached to mixers should be kept clean, and good portable ladders used when necessary to reach other areas. The tops of the wheels should not be used as substitutes for ladders. Non-slip footwear should be worn.
7. Do not allow operation by untrained operators, or by young workers lacking the mental and physical skills needed to recognize and safely handle unexpected or hazardous situations. Good judgment is required, and lack of judgment can result in injury or death. Proper training, and periodic retraining and review, are important. Trainers should always read and understand the operator’s manual and train workers to follow the manufacturer’s safety instructions. [Note: As with all powered farm equipment, federal labor laws apply to operation of TMR mixers by children under age 16 on farms other than those operated by their parents or legal guardians.]

This is a general list of hazards and injury prevention measures and is not meant to cover every possible circumstance. Individual operations, facilities, systems, machines, or situations may have unique hazards, and it is the responsibility of the farm operator or manager to be aware of such hazards and take appropriate action.



MOBILE, TRACTOR-POWERED TMR (TOTAL MIXED RATION) FEED MIXER WITH HORIZONTAL AUGERS



**TMR MIXER HORIZONTAL
PROCESSING/MIXING AUGERS
(MAY HAVE DIFFERENT CONFIGURATIONS)**

The Wisconsin Department of Health and Family Services, in agreement with the National Institute for Occupational Safety and Health (NIOSH) conducts research on occupational fatalities. The Fatality Assessment and Control Evaluation (FACE) Program focuses on identifying factors that increase the risk of work-related fatal injuries. The Wisconsin FACE Program helps in the development and use of improved safety measures for preventing fatal work injuries.

PLEASE POST

FACE information is produced and distributed to provide current, relevant education on methods to prevent severe work-related injuries.

If you have any comments or questions, please call the FACE Project at 608-264-9879, or write:

FACE Program
WI Department of Health and Family Services
Division of Public Health
P.O. Box 2659
Madison WI 53701-2659